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Wilmer Lee Briggs

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RENNER OTTO BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE
NINETEENTH FLOOR
CLEVELAND, OH 44115

EXAMINER

BOYER, RANDY

ART UNIT

PAPER NUMBER

1797

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------------|--|
| Office Action Summary | Application No. 10/632,501 | Applicant(s) BRIGGS, WILMER LEE | |
| | Examiner RANDY BOYER | Art Unit 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 14-25, 27-29, 31, 32 and 34-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 14-25, 27-29, 31, 32 and 34-49 is/are rejected.
- 7) ☒ Claim(s) 1, 40-44 and 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Examiner acknowledges Applicant's response filed 13 October 2008 containing amendments to the claims and remarks.
2. Claims 1-10, 14-25, 27-29, 31, 32, and 34-49 are pending. Claims 45-49 are newly added.
3. Applicant's amendments to claims 1, 29, and 32 are sufficient to overcome the previous objections.
4. The previous rejections of claims 1-4, 9, 35, and 40 under 35 U.S.C. 103(a) as being unpatentable over Bloch (US 3,043,771) are withdrawn in view of Applicant's amendments to the claims.
5. New grounds for rejection of claims 1, 3-5, 9, 35, 40, and 45, necessitated by Applicant's amendment to the claims, are entered under 35 U.S.C. 103(a). Likewise, new (alternative) grounds for rejection of claims 1-10 and 14-49 are entered under 35 U.S.C. 103(a) as being unpatentable over the disclosure of Yoshida (US 4,208,252).
6. Finally, the previous rejections of claims 4, 5, 18, 19, 25, 29, 32, and 35-39 under 35 U.S.C. 112, second paragraph are maintained. Claims 1, 40-44, and 47 are objected to. The objections and rejections follow.

Claim Objections

7. Claims 1 and 40-44 are objected to for lack of antecedent basis in the claims.

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8. With respect to claims 1 and 40-44, the claims recite the limitation “the filter apparatus.” There is insufficient antecedent basis for this limitation in the claims. Appropriate correction is required.

9. Claim 47 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

10. With respect to claim 47, the claim is dependent upon a cancelled claim (claim 26). Appropriate correction is required.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 4, 5, 18, 19, 25, 29, 32, and 35-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. With respect to claims 4, 5, and 35-39, the claims recite the limitation “a refinery-grade hydrocarbon” or “a refinery-grade material.” Applicant’s specification provides that the process of the instant application may be used “for preparing refinery-grade fuel which meets API and SAE standards” (see e.g., Applicant’s specification, page 6, lines 23-28). However, it is unclear what “standards” in particular Applicant is referring to (e.g., flash point, specific gravity, boiling point, color, viscosity, etc.) and the person

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having ordinary skill in the art would not be able to readily discern the intended scope of the claims by recitation of “a refinery-grade material” (e.g. must such “refinery-grade material” be saleable as a finished product without further processing?; must such “refinery-grade material” meet certain product specifications such as maximum sulfur and/or nitrogen and/or oxygen content?; etc.). Such being the case, Applicant’s recitation of a “refinery-grade hydrocarbon” or “refinery-grade material” renders the claims indefinite under 35 U.S.C. 112, second paragraph.

14. With respect to claims 18, 19, 29, and 32, the claims recite the limitation “one or more characteristic out of specification for a desired use” or “one or more characteristic requiring adjustment for a desired use.” However, the claims do not further specify what is meant by “characteristic out of specification” (or “characteristic requiring adjustment”) or “desired use” and Applicant’s specification is not sufficiently clear so as to reasonably apprise the person having ordinary skill in the art of the intended scope of the claims. Such being the case, claims 18 and 19 are indefinite under 35 U.S.C. 112, second paragraph.

15. With respect to claim 25, the claim recites the limitation “one or more off-specification characteristic relating to use in a motor vehicle” and “one or more characteristic for offsetting the one or more off-specification characteristic.” However, the claim does not further specify what “characteristic(s)” or what “specification” Applicant is referring to and Applicant’s disclosure is not sufficiently clear so as to reasonably apprise the person having ordinary skill in the art of the intended scope of

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the claim. Such being the case, claim 25 is indefinite under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. Claims 1, 3-5, 9, 35, 40, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugahara (US 3,787,330) in view of Nicholls (US 2,387,936).

19. With respect to claims 1 and 3, Sugahara discloses a process for removing a source-derived contaminant (e.g., color, acidity) from a hydrocarbon-containing material, comprising: (a) contacting the hydrocarbon-containing material (e.g., lubricating oils, motor oils, and mineral oils) (see Sugahara, column 10, lines 11-32; and column 19, lines 1-8) with a clay packed in a column at a temperature in the range of about 50°C to about 180°C (see Sugahara, column 19, lines 6-15), at least part of the

source-derived contaminant being sorbed by the clay and forming a clay-contaminant adduct; (b) removing hydrocarbon-containing material from the column wherein the removed hydrocarbon-containing material comprises a reduced amount of the source-derived contaminant and the process does not include additional or separate steps to remove any contaminant after the contacting step (see Sugahara, column 19, lines 6-46).

Sugahara does not disclose heating the clay and the clay-contaminant adduct to a temperature in a range from about 400°C to about 815°C to regenerate the clay material, and providing the generated material from the heating for re-use in the contacting.

However, Nicholls discloses a process for regenerating spent clay adsorbents used in the decolorizing filtration of petroleum oils (e.g., the process disclosed by Sugahara) (see Nicholls, page 1, left column, lines 1-13). Nicholls discloses heating spent clay to a temperature in the range from about 850°F to about 1050°F (about 454°C to about 565°C) (see Nicholls, page 3, left column, lines 20-24). Nicholls discloses that his process may be used for the regenerating and reuse of the spent adsorbent clays through at least 20 regeneration cycles (see Nicholls, page 3, right column, lines 70-75; and page 4, left column, lines 1-4).

Therefore, the person having ordinary skill in the art would have been motivated to combine the spent clay adsorbent regeneration process of Nicholls with the decolorization filtration process of Sugahara in order to effectively and efficiently regenerate the spent clay adsorbents of Sugahara for reuse in the process, thereby

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avoiding the need for disposing of the spent adsorbents and/or purchasing new adsorbents.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in combining the process of Sugahara with that of Nicholls because: (1) Sugahara uses clay adsorbents for the decolorization of petroleum oils; and (2) Nicholls explicitly discloses that his process is effective for regenerating clay adsorbents used in processes for the decolorization of petroleum oils.

20. With respect to claims 4, 5, and 35, Sugahara discloses wherein the recovered (treated) hydrocarbon is a refined (decolorized and deacidified) motor oil; and wherein the motor oil is not subjected to further cracking or fractionation (see Sugahara, column 19, lines 1-46).

21. With respect to claim 9, fuller's earth is an art-recognized substitute for the clay adsorbent used by Sugahara for the purpose of decolorizing petroleum oils (see, e.g., Nicholls, page 1, left column, lines 8-13). See MPEP § 2144.06(II).

22. With respect to claim 40, Sugahara discloses wherein the hydrocarbon-containing material is passed through the column such that the steps of contacting and removing are combined in a single operation (see Sugahara, column 19, lines 1-46).

23. With respect to claim 45, Sugahara's process is not specifically limited with respect to contacting pressure (see Sugahara, entire disclosure). Thus, any pressure could conceivably be used so long as Sugahara's objectives are satisfied.

24. Claims 1-7, 9, 10, 14-25, 27-29, 31, 32, and 34-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US 4,208,252) in view of Nicholls (US

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2,387,936). Alternatively, claims 1-7, 9, 10, 14-25, 27-29, 31, 32, and 34-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US 4,208,252) in view of Nicholls (US 2,387,936), as evidenced by Sugahara (US 3,787,330), Bloch (US 3,043,771), Klepfer (US 6,184,427), or Bullock (US 6,653,517).

25. With respect to claims 1-3, 6, 7, 9, 10, and 14-16, Yoshida discloses a process for removing a source-derived contaminant (e.g., a polymer-derived contaminant such as vinyl chloride) from a hydrocarbon-containing material, comprising: (a) contacting the hydrocarbon-containing material (e.g., material obtained from the thermal decomposition of polymeric materials) (see Yoshida, Abstract; column 2, lines 67-68; and column 3, lines 1-3) with a clay (see Yoshida, column 8, lines 30-41) at a temperature in a range from about 50°C to about 180°C (see Yoshida, column 3, lines 56-67), at least part of the source-derived contaminant being sorbed by the clay (see Yoshida, column 7, lines 43-46; and column 9, lines 3-25); (b) removing hydrocarbon-containing material, wherein the removed hydrocarbon-containing material comprises a reduced amount of the source-derived contaminant (see Yoshida, column 8, lines 59-68; and column 9, lines 1-25) and the process does not include additional or separate steps to remove any contaminant after the contacting step.

Yoshida does not heating the clay and the clay-contaminant adduct to a temperature in a range from about 400°C to about 815°C to regenerate the clay material, and providing the generated material from the heating for re-use in the contacting.

However, Yoshida discloses that hydrogen chloride gas generated by the decomposition of vinyl chloride polymers may precipitate as solid metal halide residues (see Yoshida, column 8, lines 59-63) and wherein a residue-separating step may be employed for the removal of such residues (see Yoshida, column 7, lines 43-46; and column 9, lines 3-25). In this regard, Nicholls discloses a process for regenerating spent clay adsorbents/catalysts used in various processes (see Nicholls, page 1, left column, lines 1-13; page 1, right column, lines 15-55; and page 2, left column, lines 1-11). Nicholls discloses heating spent clay/catalyst to a temperature in the range from about 850°F to about 1050°F (about 454°C to about 565°C) (see Nicholls, page 3, left column, lines 20-24). Nicholls discloses that his process may be used for the regenerating and reuse of the spent adsorbent/catalytic clays through at least 20 regeneration cycles (see Nicholls, page 3, right column, lines 70-75; and page 4, left column, lines 1-4).

Therefore, the person having ordinary skill in the art would have been motivated to modify the process of Yoshida so as to include the adsorbent regeneration process of Nicholls in order to remove the metal halide residues expected to precipitate on the clay adsorbent material in the process of Yoshida during the decomposition of vinyl chloride source material.

Moreover, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the process of Yoshida so as to include the clay adsorbent regeneration process of Nicholls because Yoshida explicitly

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suggests use of a “residue-separating step” (e.g. the regeneration process of Nicholls) to remove precipitated metal halides from the spent clay adsorbent.

Finally, Yoshida (in one aspect of his invention) is drawn to generally to a process for the treatment and conversion of plastic wastes into liquid hydrocarbon products, and as such is not specifically limited with respect to the apparatus for conducting such process. Moreover, Examiner notes that contacting and separating of a contaminated hydrocarbon material with clay adsorbent in a single packed column is generally known in the art, as evidenced by Sugahara (US 3,787,330).

26. With respect to claims 4 and 5, Yoshida discloses wherein the removed hydrocarbon-containing material may be fractionated into uniform grade hydrocarbons (see Yoshida, column 3, lines 9-13).

27. With respect to claim 8, organic material such as animal offal and crop/plant residuals are art-recognized equivalent starting materials for the conversion of waste organics (such as the waste plastics of Yoshida's process) into higher grade hydrocarbon materials (see e.g., Klepfer (US 6,184,427), Abstract; and Example VI (disclosing plastic and cellulosic starting material); and Bullock (US 6,653,517), Abstract; and column 4, lines 1-20 (disclosing dead animals, waste plastics, and other bio-wastes as starting materials)).

28. With respect to claim 17, Yoshida discloses wherein the polymeric material is thermally decomposed at a temperature from about 300°C to about 500°C (see Yoshida, column 3, lines 60-68).

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29. With respect to claims 18-24, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g. motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Thus, Examiner finds Applicant's claims 18-24 unpatentable in view of the teachings of Yoshida.

30. With respect to claim 25, 28, and 37, see discussion *supra* at paragraph 25. Moreover, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g., motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Thus, Examiner finds Applicant's claims 25, 28, and 37 unpatentable in view of the teachings of Yoshida.

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31. With respect to claims 27, 31, and 34, Yoshida discloses wherein his process can be carried out continuously (see Yoshida, column 1, lines 64-68; and column 2, lines 1-2).

32. With respect to claims 32, 35, 36, 38, and 39, see discussion *supra* at paragraph 25. Moreover, Yoshida discloses wherein the recovered gaseous products may be fractionated so as to obtain a more uniform product mixture (see Yoshida, column 3, lines 9-13). Examiner submits that the person having ordinary skill in the art would readily recognize the possibility for collecting any of a number of individual liquid hydrocarbon fractions for any of a variety of possible end uses (e.g., motor vehicle fuel, lubricant, hydraulic fluid, solvent, blending agents, process heat transfer fluid, etc.) – i.e. Yoshida is in no way limited with respect to the specific end uses of the individual hydrocarbon fractions produced and collected by his process. Finally, Examiner notes that a close reading of Yoshida discloses that the post-separation fractionation step to produce uniform liquid products is optional and not a required feature of Yoshida's process (see Yoshida, column 3, lines 9-13) (noting that fractionation to obtain uniform components is only necessary when liquid products having more uniform properties are to be obtained). Thus, Examiner finds Applicant's claims 32, 35, 36, 38, and 39 unpatentable in view of the teachings of Yoshida.

33. With respect to claims 40-44, Yoshida (in one aspect of his invention) is drawn to generally to a process for the treatment and conversion of plastic wastes into liquid hydrocarbon products, and as such is not specifically limited with respect to the apparatus for conducting such process. Moreover, Examiner notes that contacting and

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separating of a contaminated hydrocarbon material with clay adsorbent in a single adsorbent treatment column is generally known in the art, as evidenced by Bloch (US 3,043,771).

34. With respect to claims 45-49, Yoshida discloses wherein the contacting step may be carried out under pressure (see Yoshida, column 10, lines 5-54).

Response to Arguments

35. Applicant's arguments filed 13 October 2008 have been fully considered but they are not persuasive.

36. Examiner understands Applicant's principal arguments to be:

- I. The "white inorganic filler" of Yoshida is used as a catalyst to avoid the formation of disagreeable odors in the dry-distilled product.
- II. Regarding the indefiniteness rejection, "a refinery grade hydrocarbon" and "a refinery-grade material" plainly mean that the product is substantially the same as or equivalent to a similar product obtained from the usual refining process.
- III. Regarding the indefiniteness rejection, the terms "one or more characteristic out of specification for a desired use," or "one or more characteristic requiring adjustment for a desired use," and "one or more off-specification characteristic relating to use in a motor vehicle" and "one or more characteristic for offsetting the one or more off-specification characteristic" plainly describe material having one or more characteristic that does not meet the usual requirements for a similar product.

37. With respect to Applicant's first argument, Yoshida explains that the white inorganic filler is used to effectively remove halogen components released during the decomposition of halogenated plastics (see Yoshida, column 8, lines 42-58). Yoshida

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further explains that hydrogen halides such as HCl precipitate as solid metal halides when the white inorganic filler is used (see Yoshida, column 8, lines 59-63). Thus, inasmuch as the white inorganic filler is used to remove a “contaminant” (i.e. the halides released/deposited during the thermal decomposition of some plastics), then the white inorganic filler functions as an adsorbent, albeit one having some catalytic activity (see Yoshida, column 9, lines 12-18). Furthermore, Yoshida’s use of the white inorganic filler to remove odor (see Yoshida, column 9, lines 18-20) is analogous to Applicant’s use of clay to remove odor as a contaminant (see Applicant’s claims 1 and 3).

38. With respect to Applicant’s second argument, see discussion *supra* at paragraph 13. Applicant alleges by example that a diesel-grade product obtained by Applicant’s process would meet all of the “usual” requirements for a diesel-grade fuel. However, Applicant is not claiming wherein the process results is “a diesel-grade fuel,” but only “a refinery-grade hydrocarbon” or “refinery-grade material.” Examiner submits that such language, and Applicant’s comments, support Examiner’s position that Applicant’s claims fail to meet the requirements of 35 U.S.C. 112, second paragraph and are indefinite. In this regard, Examiner notes that refineries routinely produce fuels and hydrocarbons of varying grades. Moreover, the fact that Applicant has not been able to provide a single example of one of the “usual” requirements for such “refinery-grade” fuels/hydrocarbons further illustrates the indefinite scope of such claim language.

39. With respect to Applicant’s third argument, see discussion *supra* at paragraph 14. The fact that Applicant has not been able to provide a single example of one

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“characteristic” not meeting the “usual” requirements of a “similar” product illustrates the indefinite scope of such claim language.

Conclusion

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

/Glenn A Caldarola/

Acting SPE of Art Unit 1797